- Caffeine

Can coffee or a nap make up for sleep deprivation? A psychologist explains why there's no substitute for shut-eye

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We set out to test different ways to potentially make up for a lack of sleep.

What would you do if you did not sleep enough last night? Many people would reach for a cup of coffee or an energy drink. One 2022 survey found that over 90% of the American adults sampled consume some form of caffeine daily. We wanted to see whether caffeine would help maintain attention and avoid place-keeping errors after sleep deprivation.

Interestingly, we found that caffeine improved the ability to pay attention in sleep-deprived participants so well that their performance was similar to people who slept all night. Giving caffeine to people who had a full night of sleep also boosted their performance. So caffeine helped everyone maintain attention, not just those who did not sleep. This result was not surprising, as other studies have had similar findings.

However, we found that caffeine did not reduce place-keeping errors in either the sleep-deprived group or the group that slept.

This means that if you are sleep deprived, caffeine may help you stay awake and play Candy Crush, but it likely will not help you ace your algebra exam.

Of course, caffeine is an artificial way to replace sleep. We also reasoned that perhaps the best way to replace sleep would be with sleep. You have likely heard that naps during the day can boost energy and performance, so it is logical to think that a nap during the night should have a similar effect.

We gave some of our participants the opportunity to nap for either 30 or 60 minutes during an overnight deprivation period between 4 am and 6am.

This time period roughly coincides with the lowest point of alertness in the circadian cycle. Importantly, we found that participants who napped did no better on either the simple attention task or the more complex place-keeping task than those who stayed up all night.

Thus, a nap in the middle of the night had no discernible benefits to cognitive performance during the morning after a night of overall sleep deprivation.

GET YOUR Z'S

While caffeine may help you stay awake and feel more alert, it likely won't help you with tasks that require complex thought. And while a short nap may make you feel better on nights that you need to stay awake, it probably won't help your performance.

In short, sufficient sleep is essential to your mind and brain, and there is simply no substitute for sleep.

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· Kimberly Fenn is a professor of psychology at Michigan State University.